

**ABSTRACT OF THE DISCLOSURE**

A system and method for establishing estimated values of electrical parameters of a motor. The electrical parameters may be established from stator resistance data and motor data obtained at a single load on the motor. The electrical parameters also may be  
5 established without stator resistance data by using motor data at three load conditions of the motor. The electrical parameters also may be established from baseline motor data and motor data obtained at a desired operating load of the motor. Based on the estimated values, the system and method also may be used to estimate motor operating parameters, such as torque, efficiency, output power, output speed, and other performance criteria of the  
10 motor.